

The amendments to the claims are as follows. Claim 10 has been canceled without prejudice, and claim 1 has been amended to include the subject matter thereof. In addition claim 1 has been amended to recite that the treatment sequence B₂ does not need to be interrupted by rinsing with water or another treatment liquid.

Support for this is found in the present Specification on page 2 in lines 13 to 18, as follows. It is stated that the addition of fresh water or other liquids to the treatment baths is to be avoided since, when valves are opened, pressure impulses are created and particles can be introduced into the treatment baths. The treatment according to the invention is therefore different from a rinsing treatment, in which fresh treatment liquid is supplied continuously or at intervals.

Also claims 2 and 9 have been amended to overcome the formal objection to "SC1", by revising this to be "SC-1".

For all these reasons, all the claims are now in complete compliance with the requirements of 35 U.S.C. § 112. Withdrawal of this ground of rejection is respectfully requested.

Reconsideration and withdrawal are respectfully requested for the rejection of claims 1-10 as being unpatentable over the Pirooz European Patent No. 701,275.

In the paragraph bridging columns 1 and 2, *Pirooz* discloses a process for heat treating a silicon wafer comprising the steps of contacting the surface of the silicon wafer with an aqueous solution containing hydrofluoric acid, and contacting the hydrofluoric acid treated wafers with ozonated water to grow a hydrophylic oxide layer on the surface of the silicon wafer. In column 3 in lines 35-40 *Pirooz* also discloses that if the ozonated bath contains hydrochloric acid or nitric acid, the treated wafers should be rinsed in deionized water. Then in column 3, in lines 42-45, *Pirooz* teaches that the final step in the pre-heat treatment cleaning process is drying the oxidized wafers.

The present invention is directed to a process in which semiconductor wafers are treated with liquids in a specific sequence of baths, in such a manner that an interruption of the treatment sequence by rinsing with water or another liquid must be strictly avoided. Claim 1 as amended recites these features. Support for this amendment is found in the present specification on page 2 in lines 13 to 18.

The EP-reference *Pirooz* clearly teaches away from the present invention since the metals removal treatment described in column 2, lines 48-59 and the silicon oxide layer producing step

described in column 3, lines 25-34 is interrupted by rinsing the wafers in water after the metals removal step (See column 3, lines 8-10). Moreover, both the metals removal step and the oxide layer producing step each comprise a treatment with a single liquid containing different substances.

Therefore, even if both prior art steps are combined the sequence of baths according to the invention is not anticipated. This is because the claimed process comprises the use of three different liquid systems and is not anticipated by the two baths of *Pirootz*. As a consequence, the *Pirootz* reference is not at all able to suggest the present invention.

On page 3 of the Office Action, the Patent Examiner has stated that the claimed sequence of steps produces only an expected result relative to the prior art sequences of steps. For this reason, the above revisions to the claims make them consistent with the subject matter disclosed on page 5 of the present Specification.

As to the Comparative Test Examples disclosed in the present Specification on page 5, they clearly show the disadvantageous effect if the sequence is interrupted by a rinsing step with water. Only the claimed combination of treatment steps with the

final treatment with an aqueous HCl solution leads to an acceptable low number of particles on the wafers.

More particularly, in the present Specification, a Comparative Test Program was carried out, and the Comparative Test results are set forth in the Table on page 5 of the present Specification. Example B, which according to the invention, has the treatment sequence based upon hydrofluoric acid bath, deionized water with ozone bath, and HCl bath with megasonic exposure. Comparative Example 1 is very similar to the *Pirooz* reference teachings and has water rinsing outside the bath. Comparative Example 2 adds the feature of water rinsing in the bath to the comparative test of Comparative Example 1.


Thus newly added claim 11 is based upon original claims 1 and 10 plus the use of exposure to megasonic waves in the HCl bath. This is based upon the unexpected results in Example B of greatly reduced light point defects LPD shown on page 5 of the present Specification.

In summary, claim 10 has been canceled; claims 1, 2 and 9 have been amended; and claim 11 has been added. In view of these amendments, it is firmly believed that the invention, and all the claims, are patentable under 35 U.S.C. § 103 over the prior art

applied by the Patent Examiner. A prompt notification of allowability is respectfully requested.

Respectfully submitted,
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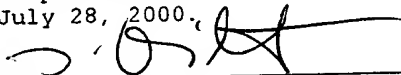
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